

W-Band Solid State Power Amplifier for Remote Sensing Radars, Phase II

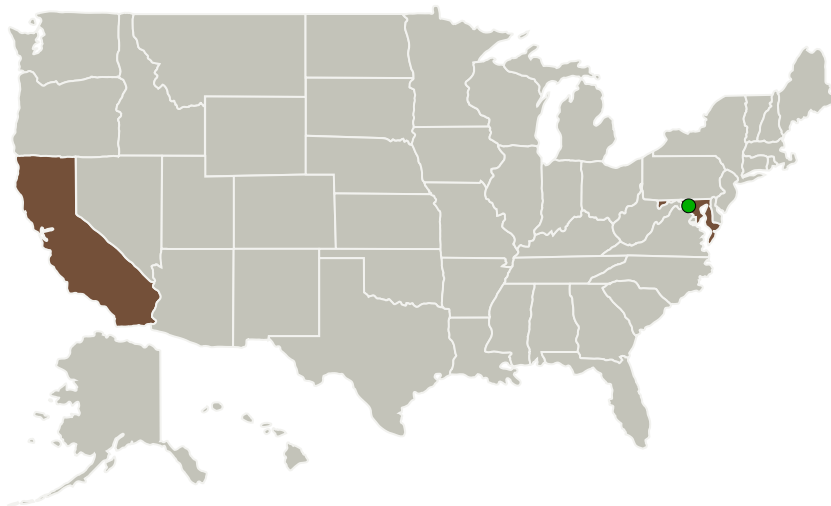
Completed Technology Project (2015 - 2018)



Project Introduction

High power, compact, reliable and affordable power amplifiers operating in the W-band (94 GHz region) are critical to realizing transmitters for many NASA missions and other significant applications for remote sensing and environmental measurements. QuinStar Technology proposes novel approach for a family of solid state power amplifiers (SSPA) that will exceed the performance and operational requirements for measurement instruments and monitoring equipment of the future. Proposed approach is based on optimal combination of unique techniques for highly efficient and yet robust power combining, circuit integration and innovative packaging methods. This also leads to affordable products suitable for space, airborne as well as terrestrial applications. Key features of the proposed implementation are: scalability of power output, compact, lightweight, flexible architecture and high reliability with very significant potential for performance improvement and price reduction as MMIC device technology matures further. Initial objective of proposed effort is to achieve greater than 50 Watts of power output at 94 GHz at greater than 20% duty cycle and with 40 dB or more gain. Phase II work will focus on innovative robust designs for power combining, packaging and select device/materials. Phase II effort will lead to a producible and scalable design baseline that will be used in Phase III for manufacturing deployable products.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Quinstar Technology, Inc	Lead Organization	Industry Small Disadvantaged Business (SDB)	Torrance, California
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

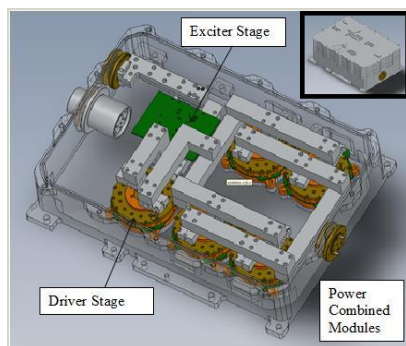
California	Maryland
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Project Transitions

**May 2015:** Project Start**March 2018:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/137703>)

Images

**Briefing Chart**W-Band Solid State Power Amplifier
for Remote Sensing Radars Briefing
Chart(<https://techport.nasa.gov/image/136249>)Organizational
Responsibility**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

Lead Organization:

Quinstar Technology, Inc

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Edward Watkins

Co-Investigator:

Edward L Watkins

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Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.2 Power-Efficiency

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System